

Reply Under 37 C.F.R. § 1.116 – Expedited Procedure

Serial No.: 09/393,752

Examiner: Lee T. Khuong

REMARKS

Claims 40, 42-48 are currently pending. Claim 48 is amended above.

Rejection of the Claims under 35 U.S.C. Section 103

The Office Action rejected the independent claims 40 and 46 and dependent claims 47 and 48 as being unpatentable under 35 U.S.C. Section 103 over U.S. Patent No. 5,805,568 to Shinbashi (the Shinbashi reference) in view of U.S. Patent No. 6,256,292 to Ellis (the Ellis reference) and further in view of US Patent 6,021,113 to Doshi et al. (the Doshi reference). Claims 42-43 were rejected under 35 U.S.C. § 103 over the Shinbashi reference in view of Ellis and further in view of the Doshi reference and further in view of U.S. Patent No. 6,324,162 to Chaudhuri (the Chaudhuri reference). Claims 44-45 were rejected under 35 U.S.C. § 103 over the Shinbashi reference in view of Ellis and further in view of the Doshi reference and further in view of U.S. Patent No. 6,282,170 to Bentall et al. (the Bentall reference). However, the claims are new and non-obvious over each of these references, either alone or in combination.

Independent Claim 40 and Dependent Claims 42 through 45

Independent claim 40 requires, "wherein the failure indication in the overhead of the synchronous optical signal indicates a failed link or congested traffic conditions on a link in the fiber optic ring network, and wherein the failure indication includes information on type of problem and link location." As discussed in the specification at pages 12, lines 12 through 21, the types of failures that prompt the node to generate overhead signal advising of a failure include not only the layer 1 and layer 2 failures, but also the layer 3 types of network conditions. *Accordingly, even a layer 3 type of network condition such as congestion in a communication link may prompt nodes on the network to switch from a first to a second ring. As such, even layer 3 conditions that have in the past gone undetected for as long as a minute or more, are detected and responded to by the inventive systems quickly.* Furthermore, the signal overhead at Layer 1, such as in the K1,K2 bytes of the SONET signal overhead, affect Layer 2 MPLS and/or Layer 3 IP routing. For example, the MPLS routing tables at layer 2 are modified based on the layer 1 signal overhead, as described in the specification on page 43, lines 1 through 15.

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On page 8, paragraph 5 in the “Response to Arguments” section of the Office Action, it states that claim 40 does not include those features of prompting a node to generate overhead signal advising of a failure in response to layer 1 and layer 2 failures, and also layer 3 types of network conditions. However, claim 40 specifically requires, “wherein the failure indication in the overhead of the synchronous optical signal indicates a failed link or congested traffic conditions on a link.” As explained in the specification at page 12, lines 12 through 21, a layer 3 type of network condition includes congestion. Layer 1 and layer 2 types failures include failed link. As explained below, none of the cited references, either alone or in combination, teach the requirements of the claim.

U.S. Patent No. 5,805,568 to Shinbashi

First, the Shinbashi reference fails to disclose the requirement of claim 40, *inter alia*, of, “in response to receiving the failure indication on the overhead of a synchronous optical signal in the fiber optic ring network, a protection path switching unit for determining packets that are to be transmitted on working paths affected by the failure and relabeling the packets for transmission on a label switched protection path in the fiber optic ring network.” As stated in the Office Action and on column 15, lines 39-50, failure indications are received in OAM cells and not in signaling overhead.

Furthermore, the Shinbashi reference fails to disclose the requirement of claim 40, *inter alia*, of, “wherein the failure indication in the overhead of the synchronous optical signal indicates a failed link or congested traffic conditions on a link in the fiber optic ring network, and wherein the failure indication includes information on type of problem and link location.” As stated in the Office Action, page 3, end of first paragraph, the Shinbashi reference fails to teach of the failure indication being contained in the overhead of a synchronous optical signal.

Furthermore, the Shinbashi reference fails to teach that such a failure indication in the synchronous optical signal overhead may be generated in response to a layer 3 condition such as traffic congestion. As stated at column 8, lines 12 through 15, the failure detecting unit 100 monitors ATM cell received by the tributary interface unit for the LAN in order to detect insufficient synchronization of the ATM cell. When detected, as stated at column 8, lines 33

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through 36, an OAM cell is transmitted into a channel for managing the optical fiber. So the Shinbashi reference teaches away from the requirements of the claims that a failure indication in the overhead of the synchronous optical signal indicates a failed link or congested traffic conditions on a link in the fiber optic ring network.

U.S. Patent No. 6,256,292 to Ellis

The Office Action states that the Ellis reference teaches of a protection path switched technique for use in a fiber optic ring network that includes a failure indication in the overhead of the synchronous optical signal. However, this teaching does not meet the requirements of the claims.

Claim 40 requires, “wherein the failure indication in the overhead of the synchronous optical signal indicates a failed link or congested traffic conditions on a link in the fiber optic ring network, and wherein the failure indication includes information on type of problem and link location.” As discussed in the specification at pages 12, lines 12 through 21, such layer 3 conditions have in the past gone undetected for as long as a minute or more and are detected and responded to by the present inventive systems quickly.

The Ellis reference merely discloses a typical SONET system that indicates Layer 1 type conditions such as line failures in the K1,K2 bytes of overhead, as seen in Figures 3 through 5 and 13. As stated at column 8, lines 44 through 45, the failures being described in the Ellis reference are when fibers 2 and 4 are cut.

U.S. Patent No. 6,021,113 to Doshi

The Doshi reference fails to add to the teachings of the Shinbashi reference or the Ellis reference. The Doshi reference no where discloses the requirement of claim 40, *inter alia*, of, “wherein the failure indication in the overhead of the synchronous optical signal indicates a failed link or congested traffic conditions on a link in the fiber optic ring network, and wherein the failure indication includes information on type of problem and link location.” The Doshi reference no where mentions any type of signaling in overhead of a synchronous optical signal. Rather it teaches away from the present invention by stating that PROBE messages and

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REQUEST messages are exchanged between nodes to determine a congestion status of a link, as described at column 26, lines 27 through 58.

Combination of the Shinbashi reference and the Ellis reference and the Doshi reference

The Office Action argues that one of ordinary skill in the art would have been motivated to modify the Shinbashi reference to transmit the failure indication in the overhead of the synchronous optical signal rather than in the OAM cells. However, nowhere in the prior art references is there any suggestion for such modification. Obviousness cannot be established by combining the teachings of the prior art to produce the claimed invention, absent some teaching, suggestion or incentive supporting the combination. Absent such teachings, the rejection is merely based on hindsight teachings of the application.

Furthermore, even if combined, the Shinbashi reference and the Ellis reference and the Doshi reference would fail to meet the requirements of claim 40. The Ellis reference merely discloses a typical SONET system that indicates Layer 1 line failures in the K1,K2 bytes of overhead, as seen in Figures 3 through 5 and 13. The Shinbashi reference and the Doshi reference actually teaches away from the claimed invention by disclosing upper layer messaging to indicate network conditions (such as the OAM cells in Shinbashi or the PROBE/REQUEST messages in Doshi reference). If combined with the Shinbashi reference, it would only teach to include indications of layer 1 line failures in K1,K2 bytes of overhead. Nowhere do the references, either alone or in combination, teach that layer 3 types of failures, such as traffic congestion, be a failure indication in the overhead of the synchronous optical signal. Furthermore, none of the references indicate using the signal overhead at Layer 1, such as in the K1,K2 bytes of the SONET signal overhead, to affect the Layer 2 MPLS and/or Layer 3 IP routing of packets.

U.S. Patent No. 6,324,162 to Chaudhuri

The Chaudhuri reference fails to add to the teachings of the Shinbashi reference or the Ellis reference to meet the requirements of the claims. In specific, claim 40 requires, “wherein the failure indication in the overhead of the synchronous optical signal indicates a failed link or congested traffic conditions on a link in the fiber optic ring network, and wherein the failure

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indication includes information on type of problem and link location.” Similarly to the Ellis reference, the Chaudhuri reference merely discloses transmitting Layer 1 type failures in overhead bytes. As stated at column 6, lines 21 through 25, “Upon the failure of a working channel in link 14 between the nodes 12A and 12D, the nodes 12A and 12D detect the failed channel because of a Loss of Signal (LOS), Loss of Frame (LOF) or Signal Degrade (SD). Upon detecting a failed channel, the nodes 12A and 12D communicate this event, typically via overhead bytes in the traffic signals . . .” Nowhere does the Ellis reference discuss indicating Layer 2 or 3 type conditions, such as traffic congestion, in synchronous optical network overhead.

U.S. Patent No. 6,282,170 to Bentall et al.

The Bentall reference fails to teach the requirements of claim 40, *inter alia*, of, “wherein the failure indication in the overhead of the synchronous optical signal indicates a failed link or congested traffic conditions on a link in the fiber optic ring network, and wherein the failure indication includes information on type of problem and link location.” The Bentall reference fails to even discuss overhead of the synchronous optical signals or type of failure indications in such overhead.

For the above reasons, the references fail to disclose or suggest the requirements of claim 40 and dependent claims 42 through 45.

Independent Claim 46 and Dependent Claim 47

Independent claim 46 requires the step of, “receiving a failure indication in overhead bytes of the synchronous optical network that an adjacent link has a failure or traffic congestion.” As discussed in the specification at pages 12, lines 12 through 21, the types of failures that prompt the node to generate overhead signal advising of a failure include not only the layer 1 and layer 2 failures, but also the layer 3 types of network conditions. Accordingly, even a condition such as congestion in a communication link may prompt nodes on the network to switch from a first to a second ring. As such, even layer 3 conditions that have in the past gone undetected for as long as a minute or more, are detected and responded to by the inventive systems quickly.

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On page 9, in the "Response to Arguments" section of the Office Action, it states that claim 46 does not include those features of prompting a node to generate overhead signal advising of a failure in response to layer 1 and layer 2 failures, and also layer 3 types of network conditions. However, claim 46 specifically requires, "receiving a failure indication in overhead bytes of the synchronous optical network that an adjacent link has a failure or traffic congestion." As explained in the specification at page 12, lines 12 through 21, a layer 3 type of network condition includes congestion. Layer 1 and layer 2 types failures include link failures.

As discussed above, the references cited in the Office Action fail to teach or disclose the requirements of claim 46. The Shinbashi reference fails to teach that such a failure indication in the synchronous optical signal overhead may be generated in response to a layer 3 condition such as traffic congestion. As stated at column 8, lines 12 through 15, the failure detecting unit 100 monitors ATM cell received by the tributary interface unit for the LAN in order to detect insufficient synchronization of the ATM cell. When detected, as stated at column 8, lines 33 through 36, an OAM cell is transmitted into a channel for managing the optical fiber.

The Ellis reference merely discloses a typical SONET system that indicates line failures in the K1,K2 bytes of overhead, as seen in Figures 3 through 5 and 13.

The Doshi reference nowhere mentions any type of signaling in overhead of a synchronous optical signal. Rather it teaches away from the present invention by stating that PROBE messages and REQUEST messages are exchanged between nodes to determine a congestion status of a link, as described at column 26, lines 27 through 58.

Similarly to the Ellis reference, the Chaudhuri reference merely discloses transmitting Layer 1 or Layer 2 type failures in overhead bytes. As stated at column 6, lines 21 through 25, "Upon the failure of a working channel in link 14 between the nodes 12A and 12D, the nodes 12A and 12D detect the failed channel because of a Loss of Signal (LOS), Loss of Frame (LOF) or Signal Degrade (SD). Upon detecting a failed channel, the nodes 12A and 12D communicate this event, typically via overhead bytes in the traffic signals . . ." And finally, the Bentall reference fails to even discuss overhead of the synchronous optical signals or type of failure indications in such overhead.

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Even if combined, the references would fail to meet the requirements of the claims. The Office Action argues that one of ordinary skill in the art would have been motivated to modify the Shinbashi reference to transmit the failure indication in the overhead of the synchronous optical signal rather than in the OAM cells. However, nowhere in the prior art references is there any suggestion for such modification. Obviousness cannot be established by combining the teachings of the prior art to produce the claimed invention, absent some teaching, suggestion or incentive supporting the combination. Absent such teachings, the rejection is merely based on hindsight teachings of the application. Furthermore, even if combined, the Shinbashi reference and the Ellis reference and the Doshi reference would fail to meet the requirements of claim 46. The Ellis reference merely discloses a typical SONET system that indicates Layer 1 line failures in the K1,K2 bytes of overhead, as seen in Figures 3 through 5 and 13. The Shinbashi reference and the Doshi reference actually teaches away from the claimed invention by disclosing upper layer messaging to indicate network conditions (such as the OAM cells in Shinbashi or the PROBE/REQUEST messages in Doshi reference). If combined with the Shinbashi reference, it would only teach to include indications of Layer 1 line failures in K1,K2 bytes of overhead. Nowhere do the references, either alone or in combination, teach that layer 3 types of failures, such as traffic congestion, be a failure indication in the overhead of the synchronous optical signal. Thus, for these reasons, the references fail to disclose or suggest the requirements of claim 46.

Independent Claim 48

Independent claim 48 requires, “a network condition unit for periodically determining if a failure has occurred in an adjacent link to the label switched router, wherein a type of the failure may include layer 3 type network conditions such as traffic congestion conditions,” and “a network interface unit that inserts a routing label on received packets, converts the packets to a synchronous optical signal for transmission on the fiber optic ring network and in response to a failure being indicated by the network condition unit, inserting a failure indicator in overhead of the synchronous optical signal.” As discussed in the specification at pages 12, lines 12 through 21, the types of failures that prompt the node to generate overhead signal advising of a failure

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include not only the layer 1 and layer 2 failures, but also the layer 3 types of network conditions. Accordingly, even a condition such as congestion in a communication link may prompt nodes on the network to switch from a first to a second ring. As such, even layer 3 conditions that have in the past gone undetected for as long as a minute or more, are detected and responded to by the inventive systems quickly.

On page 9, in the “Response to Arguments” section of the Office Action, it states that claim 48 does not include those features of prompting a node to generate overhead signal advising of a failure in response to layer 1 and layer 2 failures, and also layer 3 types of network conditions. Claim 48 has been amended to more broadly claim any type of layer 3 condition, such as network congestion. Claim 48 states, “wherein a type of the failure may include layer 3 type network conditions such as traffic congestion conditions.” As explained in the specification at page 12, lines 12 through 21, a layer 3 type of network condition includes congestion.

For similar reasons discussed above, the references cited in the Office Action fail to teach or disclose the requirements of claim 48. The Shinbashi reference fails to teach that a failure indication in the synchronous optical signal overhead may be generated in response to a layer 3 condition such as traffic congestion. As stated at column 8, lines 12 through 15, the failure detecting unit 100 monitors ATM cell received by the tributary interface unit for the LAN in order to detect insufficient synchronization of the ATM cell. When detected, as stated at column 8, lines 33 through 36, an OAM cell is transmitted into a channel for managing the optical fiber.

The Ellis reference merely discloses a typical SONET system that indicates line failures in the K1,K2 bytes of overhead, as seen in Figures 3 through 5 and 13.

The Doshi reference nowhere mentions any type of signaling in overhead of a synchronous optical signal. Rather it teaches away from the present invention by stating that PROBE messages and REQUEST messages are exchanged between nodes to determine a congestion status of a link, as described at column 26, lines 27 through 58.

Similarly to the Ellis reference, the Chaudhuri reference merely discloses transmitting Layer 1 or Layer 2 type failures in overhead bytes. As stated at column 6, lines 21 through 25, “Upon the failure of a working channel in link 14 between the nodes 12A and 12D, the nodes 12A and 12D detect the failed channel because of a Loss of Signal (LOS), Loss of Frame (LOF)

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or Signal Degrade (SD). Upon detecting a failed channel, the nodes 12A and 12D communicate this event, typically via overhead bytes in the traffic signals . . .” And finally, the Bentall reference fails to even discuss overhead of the synchronous optical signals or type of failure indications in such overhead.

Even if combined, the references would fail to meet the requirements of the claims. The Office Action argues that one of ordinary skill in the art would have been motivated to modify the Shinbashi reference to transmit the failure indication in the overhead of the synchronous optical signal rather than in the OAM cells. However, nowhere in the prior art references is there any suggestion for such modification. Obviousness cannot be established by combining the teachings of the prior art to produce the claimed invention, absent some teaching, suggestion or incentive supporting the combination. Absent such teachings, the rejection is merely based on hindsight teachings of the application. Furthermore, even if combined, the Shinbashi reference and the Ellis reference and the Doshi reference would fail to meet the requirements of claim 48. The Ellis reference merely discloses a typical SONET system that indicates Layer 1 line failures in the K1,K2 bytes of overhead, as seen in Figures 3 through 5 and 13. The Shinbashi reference and the Doshi reference actually teaches away from the claimed invention by disclosing upper layer messaging to indicate network conditions (such as the OAM cells in Shinbashi or the PROBE/REQUEST messages in Doshi reference). If combined with the Shinbashi reference, it would only teach to include indications of Layer 1 line failures in K1,K2 bytes of overhead. Nowhere do the references, either alone or in combination, teach that layer 3 types of failures, such as traffic congestion, be a failure indication in the overhead of the synchronous optical signal. Thus, for these reasons, the references fail to disclose or suggest the requirements of claim 48.

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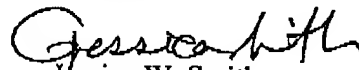
CONCLUSION

For the above reasons, the foregoing amendment places the Application in condition for allowance. Therefore, it is respectfully requested the claim amendment be entered and the rejection to the claims be withdrawn under 37 C.F.R. § 1.116 on the grounds that the application is in condition for allowance. Should the Examiner have any further comments or suggestions, please contact Jessica Smith at (972) 477-9109.

Respectfully submitted,

ALCATEL

Dated: October 31, 2005


Jessica W. Smith
Reg. No. 39,884

Alcatel USA
Intellectual Property Department
3400 W. Plano Parkway, M/S LEGL2
Plano, TX 75075
Phone: (972) 477-9109
Fax: (972) 477-9328